

What is claimed is:

1. An article for use in manufacturing an array, the article comprising:
a polymeric substrate;
a mask layer on the article having a projected surface area and a
5 topographical surface area that is greater than the projected surface area; and
linking agents on the mask layer.

2. The article of claim 1, wherein the mask layer has an optical density of
about 0.5 or greater for light of selected wavelengths.

10 3. The article of claim 1, wherein the mask layer has an optical density of
about 1.0 or greater for light of selected wavelengths.

15 4. The article of claim 1, wherein the mask layer comprises at least one
metal.

5. The article of claim 1, wherein the mask layer comprises at least two
different metals.

20 6. The article of claim 1, wherein the mask layer comprises one or more
metals, one or more metallic compounds, or combinations of one or more metals
and one or more metallic compounds.

25 7. The article of claim 1, wherein the mask layer comprises ink.

8. The article of claim 1, wherein the topographical surface area is at least
two times greater than the projected surface area.

30 9. The article of claim 1, wherein the topographical surface area is at least
five times greater than the projected surface area.

10. The article of claim 1, wherein the topographical surface area is at least fifteen times greater than the projected surface area.
- 5 11. The article of claim 1, wherein the substrate is derived from a heat shrink film starting material.
12. The article of claim 1, wherein the substrate is derived from starting material selected from the group consisting of biaxially oriented low density polyethylene, biaxially oriented linear low density polyethylene, a biaxially oriented ultra low density polyethylene, and biaxially oriented ethylene vinyl acetate.
- 10 13. The article of claim 1, further comprising a linking agent coating on the mask layer, wherein the linking agent coating comprises the linking agents.
- 15 14. The article of claim 1, wherein the linking agent coating comprises a first sub-layer on the mask layer and a second sub-layer on the first sub-layer.
- 20 15. The article of claim 1, wherein the linking agents comprise an azlactone moiety.
16. An array comprising:
a polymeric substrate;
a mask layer on the array having a projected surface area and a
25 topographical surface area that is greater than the projected surface area;
linking agents on the mask layer; and
reactants affixed to the linking agents to form binding sites on the array.
17. The array of claim 16, wherein the reactants are selected from the group
30 consisting of nucleic acids, proteins, and carbohydrates.
18. The array of claim 16, wherein the reactants comprise oligonucleotides.

19. The array of claim 16, wherein the reactants comprise cDNA.

20. An article comprising:

5 a polymeric substrate;

a layer on the article comprising at least one metal or metallic compound,
wherein the layer has a projected surface area and a topographical surface area
that is greater than the projected surface area.

10 21. The article of claim 20, wherein the layer consists essentially of one or
more metals, one or more metallic compounds, or combinations of one or more
metals and one or more metallic compounds.

15 22. The article of claim 20, wherein the topographical surface area is at least
two times greater than the projected surface area.

23. The article of claim 20, wherein the topographical surface area is at least
five times greater than the projected surface area.

20 24. The article of claim 20, wherein the topographical surface area is at least
fifteen times greater than the projected surface area.

25 25. The article of claim 20, wherein the substrate is derived from a heat
shrink film starting material.

26. The article of claim 20, wherein the substrate is derived from starting
material selected from the group consisting of biaxially oriented low density
polyethylene, biaxially oriented linear low density polyethylene, a biaxially
oriented ultra low density polyethylene, and biaxially oriented ethylene vinyl
30 acetate.

27. A method of forming an article comprising:

providing a polymeric substrate having a first major surface with a first surface area;

providing a layer on the first major surface of the substrate, wherein the layer comprises at least one metal or metallic compound, and further wherein the layer has a projected surface area and a topographical surface area that are equivalent; and

relaxing the substrate to reduce the first surface area after providing the layer thereon, wherein, after relaxing, the topographical surface area of the layer is increased such that it is greater than the projected surface area of the layer.

28. The method of claim 27, wherein the layer comprises one or more metals, one or more metallic compounds, or combinations of one or more metals and one or more metallic compounds.

29. The method of claim 27, wherein, before relaxing, the layer exhibits an original optical density for light of selected wavelengths, and further wherein, the relaxing increases the optical density of the layer to a relaxed optical density that is greater than the original optical density for light of selected wavelengths.

30. The method of claim 27, wherein the substrate comprises oriented heat-shrink film, and further wherein the relaxing comprises heating the substrate.

31. The method of claim 27, further comprising stretching the substrate to provide the first major surface with the first surface area, wherein the relaxing comprises releasing the substrate from the stretching and further wherein the layer is provided on the first major surface of the substrate after the stretching and before the releasing.

32. An article for use in manufacturing an array, the article comprising:
a polymeric substrate; and
a mask layer comprising ink and linking agents on the article, wherein
the mask layer has a projected surface area and a topographical surface area that
5 is greater than the projected surface area.

33. The article of claim 32, wherein the mask layer has an optical density of
about 0.5 or greater for light of selected wavelengths.

10 34. The article of claim 32, wherein the mask layer has an optical density of
about 1.0 or greater for light of selected wavelengths.

35. The article of claim 32, wherein the topographical surface area is at least
two times greater than the projected surface area.

15 36. The article of claim 32, wherein the topographical surface area is at least
five times greater than the projected surface area.

20 37. The article of claim 32, wherein the topographical surface area is at least
fifteen times greater than the projected surface area.

38. The article of claim 32, wherein the substrate is derived from a heat
shrink film starting material.

25 39. The article of claim 32, wherein the substrate is derived from starting
material selected from the group consisting of biaxially oriented low density
polyethylene, biaxially oriented linear low density polyethylene, a biaxially
oriented ultra low density polyethylene, and biaxially oriented ethylene vinyl
acetate.

30 40. The article of claim 32, wherein the linking agents comprise an azlactone
moiety.

41. An array comprising:
a polymeric substrate;
a mask layer comprising ink and linking agents on the array, wherein the
5 mask layer has a projected surface area and a topographical surface area that is
greater than the projected surface area; and
reactants affixed to the linking agents to form binding sites on the array.

42. The array of claim 41, wherein the reactants are selected from the group
10 consisting of nucleic acids, proteins, and carbohydrates.

43. The array of claim 41, wherein the reactants comprise oligonucleotides.

44. The array of claim 41, wherein the reactants comprise cDNA.
15

45. A method of manufacturing an array comprising:
providing a polymeric substrate having a first major surface with a first
surface area;

providing a mask layer on the first major surface of the substrate, the
20 mask layer exhibiting an original optical density for light of selected
wavelengths;

providing binding sites on the mask layer; and
relaxing the substrate to reduce the first surface area after providing the
mask layer, wherein the relaxing increases the optical density of the mask layer
25 to a relaxed optical density that is greater than the original optical density for
light of selected wavelengths.

46. The method of claim 45, wherein the original optical density of the mask
layer is about 0.5 or less for light of selected wavelengths.
30

47. The method of claim 45, wherein, before relaxing, the mask layer has a
projected surface area and a topographical surface area that are equivalent.

48. The method of claim 45, wherein, after relaxing, the mask layer has a projected surface area and a topographical surface area that is greater than the projected surface area.

5

49. The method of claim 45, wherein the mask layer comprises a metal.

50. The method of claim 45, wherein the mask layer comprises at least two different metals.

10

51. The method of claim 45, wherein the mask layer comprises one or more metals, one or more metallic compounds, or combinations of one or more metals and one or more metallic compounds.

15

52. The method of claim 45, wherein the mask layer comprises ink.

53. The method of claim 45, wherein providing the binding sites comprises providing linking agents and affixing reactants to the linking agents to form the binding sites.

20

54. The method of claim 53, wherein providing the linking agents comprises providing a linking agent coating on the mask layer, the linking agent coating comprising the linking agents

25

55. The method of claim 54, wherein providing the linking agent coating comprises providing a first sub-layer on the mask layer and providing a second sub-layer on the first sub-layer.

30

56. The method of claim 53, wherein the linking agents comprise an azlactone moiety.

57. The method of claim 53, wherein the reactants are selected from the group consisting of nucleic acids, proteins, and carbohydrates.
58. The method of claim 53, wherein the reactants comprise
5 oligonucleotides.
59. The method of claim 53, wherein the reactants comprise cDNA.
60. The method of claim 45, wherein the relaxing increases binding site
10 density.
61. The method of claim 45, wherein the substrate comprises oriented heat-shrink film, and further wherein the relaxing comprises heating the substrate.
62. The method of claim 45, wherein the substrate is selected from the group
15 consisting of biaxially oriented low density polyethylene, biaxially oriented linear low density polyethylene, biaxially oriented ultra low density polyethylene, and biaxially oriented ethylene vinyl acetate, and further wherein the relaxing comprises heating the substrate
20
63. The method of claim 45, further comprising stretching the substrate to provide the first major surface with the first surface area, wherein the relaxing comprises releasing the substrate from the stretching and further wherein the mask layer is provided on the first major surface of the substrate after the
25 stretching and before the releasing.